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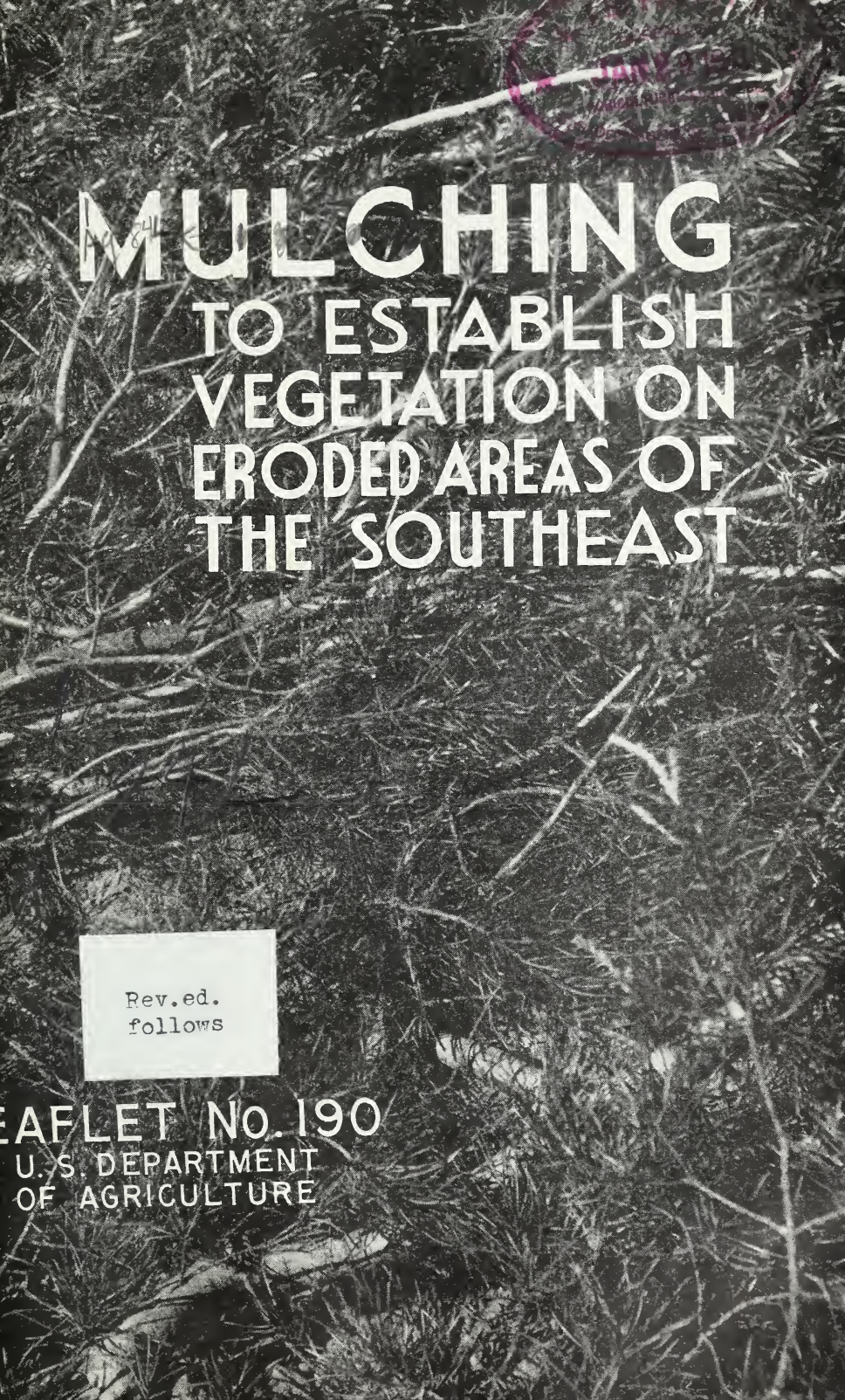
MULCHING
TO ESTABLISH
VEGETATION ON
ERODED AREAS OF
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MULCHING TO ESTABLISH VEGETATION ON ERODED AREAS OF THE SOUTHEAST

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The many eroded field borders, galled spots, and gullies throughout the Southeastern States and other sections of the country offer an opportunity for the use of vegetation that will perform the dual job of controlling erosion and providing food and cover for wildlife. The establishment of vegetation on eroded sites, however, is often impracticable and difficult without some protective cover. Fortunately, a very simple and inexpensive method of overcoming this difficulty is available through the use of some type of mulch material (fig. 1).

Mulching is the operation of applying on the ground, a thin, uniform coating of such material as pine branches, leaf litter, grain straw, *Lespedeza sericea* stems, or cane bagasse. It does not include the practice, often used by farmers in the South, of throwing brush haphazardly into gully bottoms and ditches, or of smothering the ground with straw as is commonly done for winter protection in the North.

Mulching Benefits

The fourfold benefits of mulching are moisture conservation, seed retention, soil protection and improvement, and seedling protection.

Figure 1.—An eroded field border partly mulched with pine branches.

A layer of mulch on an eroded spot acts like the litter on a forest floor by conserving moisture and preventing soil losses (fig. 2). Because of this ground covering, evaporation of soil moisture by wind and sun is retarded and, also, according to recent investigations, the soil is left in an improved condition to absorb water in larger quantities.

Protection from drying sun and wind is particularly important during and immediately following seed germination to prevent loss of the young plants as the result of soil crusting or lack of moisture. Mulch acts also as a protective cover to reduce transpiration and thus decreases plant wilting.

A mulch is also beneficial in reducing the movement of soil particles during rains. Thus, small silt deposits are formed that provide an excellent seedbed. Moreover, mulching material is organic, and in the course of time decays, and improves the site. Mulch can be classed, therefore, as an indirect fertilizing agent that reduces but does not eliminate the necessity for fertilization.

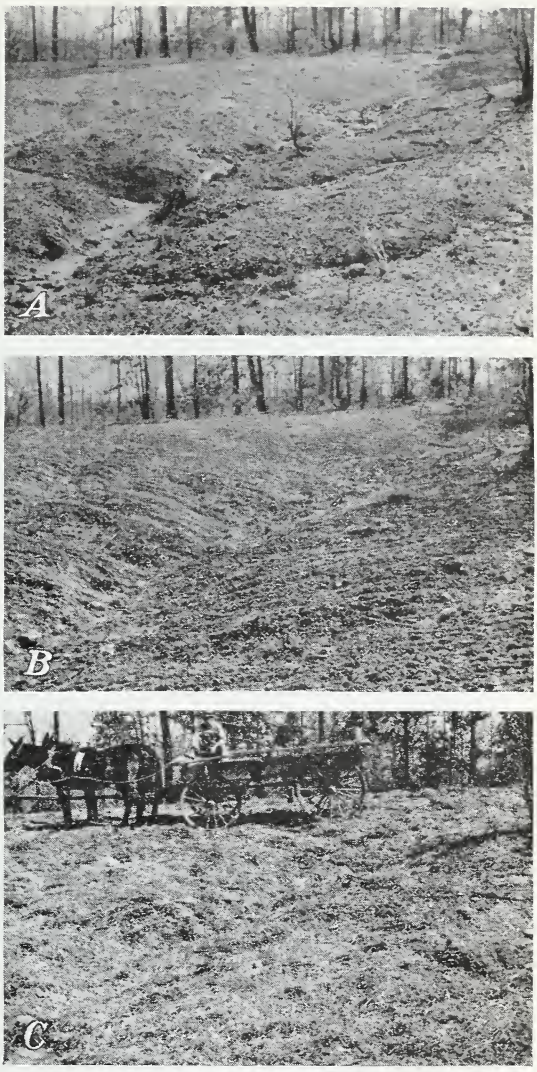

FIGURE 2.—A galled spot seeded and mulched with grain straw: *A*, Area before treatment; *B*, harrowed; *C*, seeded and mulched.

It was found rather recently that a protective covering of mulch effectively reduces the danger of damage from frost heaving or spewing. This fact is important in connection with late seedings of perennials as the plants may not have had time to develop roots capable of withstanding the full force of frost heaving.

There are many different mulching materials that can be used successfully in the Southeast. The following are listed in the order of the degree of success that has accompanied their use during the past few years of trial: Pine branches, grain straw, cane bagasse, *Lespedeza*

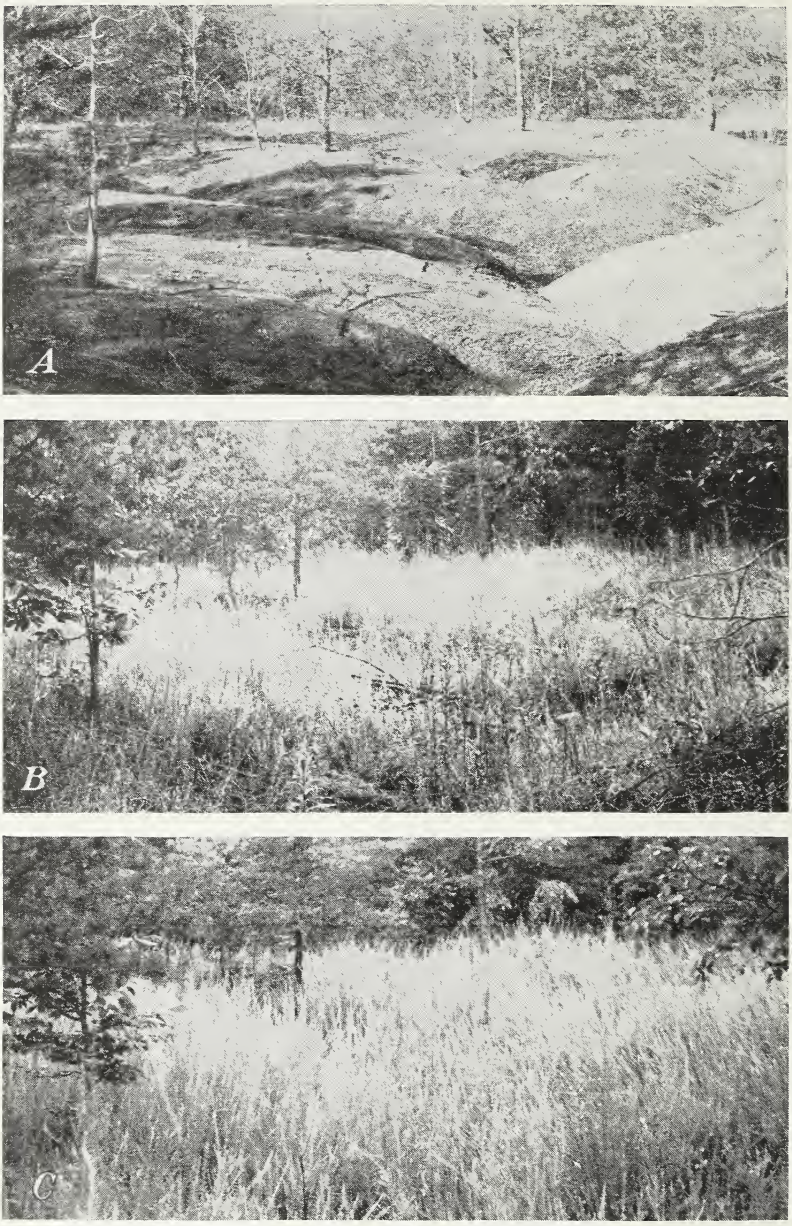

FIGURE 3.—A mulch was necessary to establish *Lespedeza sericea* on this typical gullied area: *A*, Before treatment; *B*, the same site 18 months later (note pine-brush mulch); *C*, a year later.

sericea stems, fallen pine litter, hardwood tops, and hardwood litter. However, availability is usually the determining factor in the choice of material. Most mulches are waste or refuse materials that have little or no cash value.

Green Pine Branches as Mulch

Green pine branches have proved to be the most successful mulch (fig. 3). This is attributable principally to the fact that they do not lie too close to the ground (fig. 4) and thus furnish the much needed shade for tender young plants without smothering them. Even though the application of pine branches may require more time than the use of other types of mulch, the additional labor is offset by the greater assurance of a successful stand from the seeding. Furthermore, pine brush often is available as a result of wood cutting or as a byproduct of silvicultural operations, and thus it requires very little additional labor for its application.

In applying pine-brush mulch, the branches should be cut about 3 or 4 feet long and the branches always laid with the butts in the direction of the immediate run-off. Placed in this manner, the ends of the pine needles are held close to the ground in the best position to catch silt. Best results will be obtained if the work is begun at the bottom of the slope, and continued to the top. Larger branches may be placed crosswise over the mulch if necessary to make it lie flat. The mulch, when properly applied, should cover approximately 50 percent of the ground. When put on too thin, the brush does not do a complete job, and when used too heavily, it smothers the vegetation beneath it.

Other Mulch Material

Grain straw and pine litter as mulch (fig. 5) provide good protection for germination and early plant growth, but they do not furnish shade later for the young plants as the pine brush does. Cane bagasse also is satisfactory as a mulch if it has weathered a year before it is used. There is an acid in freshly pressed cane bagasse that seems to exert a toxic action on newly sprouted seedlings. Another handicap to the use of straw, cane bagasse, and similar material is the difficulty of spreading the material evenly when it is wet or when winds are strong enough to blow the lighter parts away.

Another mulch material which deserves recognition is *Lespedeza sericea* stems. In some instances the stems from which the seed have been flailed are used as mulch. Enough seed often remains attached to the stems to give satisfactory stands, but this cannot be relied upon as a general practice. On the other hand, when unthreshed *L. sericea* is used as mulch, satisfactory stands are obtained almost without fail.

Premulching

Thus far, mulching has been dealt with as a practice to be carried on simultaneously with seeding operations. It is possible, and in some situations advisable, to change the procedure and apply the mulch well in advance of seeding. This practice, termed "premulching," may be used in late summer, fall, and early winter. After mulch is applied, it is left undisturbed until the following seeding season.

The advantages of premulching over the usual method apply to areas where soil preparation with machinery is impracticable. The retention of silt and the mellowing of the soil by the slight freezing and thawing that takes place even under mulch furnishes all the soil preparation necessary to the establishment of satisfactory stands of lespedezas. Thus, hand preparation is eliminated. Probably the most significant advantage of premulching is that it can be done at a time when farm labor is not at a premium. In other words, farmers can do this work more conveniently after their crops are laid by in the summer, or are harvested in the fall. In the following spring it is necessary to spend only a few moments broadcasting the seed over the mulch, when fields are too wet to work. Seeding right after a rain is very desirable. Results, as measured by the growth and number of plants per square foot on premulched areas, are quite satisfactory.

Annual Crops as Mulch

Another innovation in mulching technique is the use of an annual plant to produce temporary ground cover and mulch. This practice has been confined almost completely to eroded field borders and other galled strips that could be prepared with farm machinery. A plant

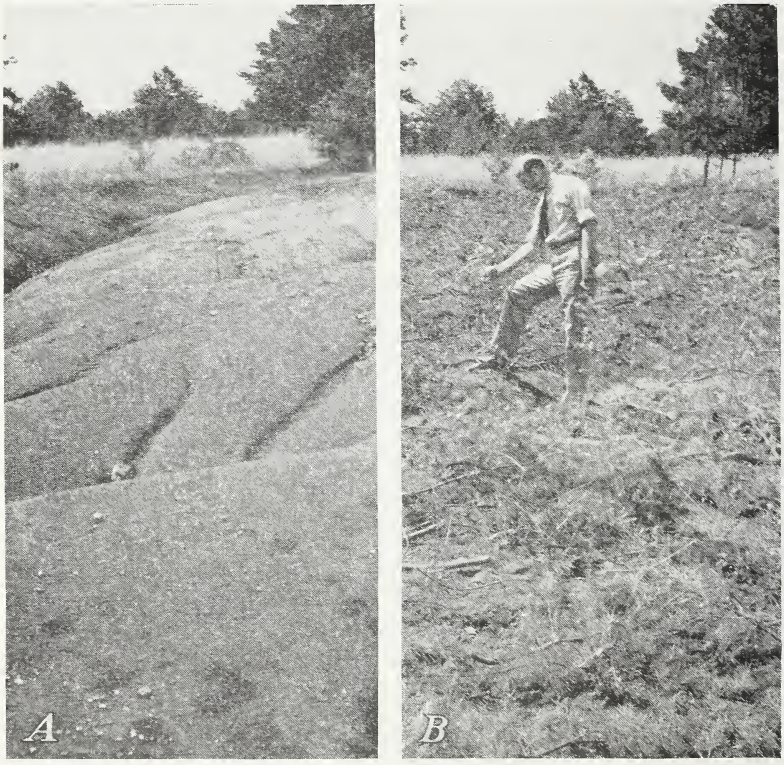

FIGURE 4.—*A*, An eroded area before mulching; *B*, pine branches applied.

to be useful in this capacity must be capable of making a fairly good growth on poor sites, must produce considerable stalk and leaves, and must not readily reseed.

This annual supplementary crop, often referred to as a nurse or mulch crop, may be planted at the same time as the perennial crop or 1 year earlier. When the former method is used, the competition of the mulch crop usually retards the growth of the perennial vegetation. On the other hand, the annual cover crop quickly reduces erosion, and thus partly compensates for the loss of first-year growth of the perennial that seldom gives adequate protection until the second year.

Instead of seeding the mulch crop with the perennial, it may be established a year in advance. Before the time arrives for seeding the permanent vegetation, the nurse crop has formed a well-decayed mulch, and the lespedeza seed are sown broadcast over the mulch. This process requires two seedings and entails slightly more expense.

The species of annual plants that can be used as mulch crops in the Southeast appear, at present, to be limited. The three plants that have been used for this purpose with most success are browntop millet (*Panicum fasciculatum* Swartz), Sudan grass (*Sorghum vulgare* var. *sudanense*) and sorghum (*Sorghum vulgare*).

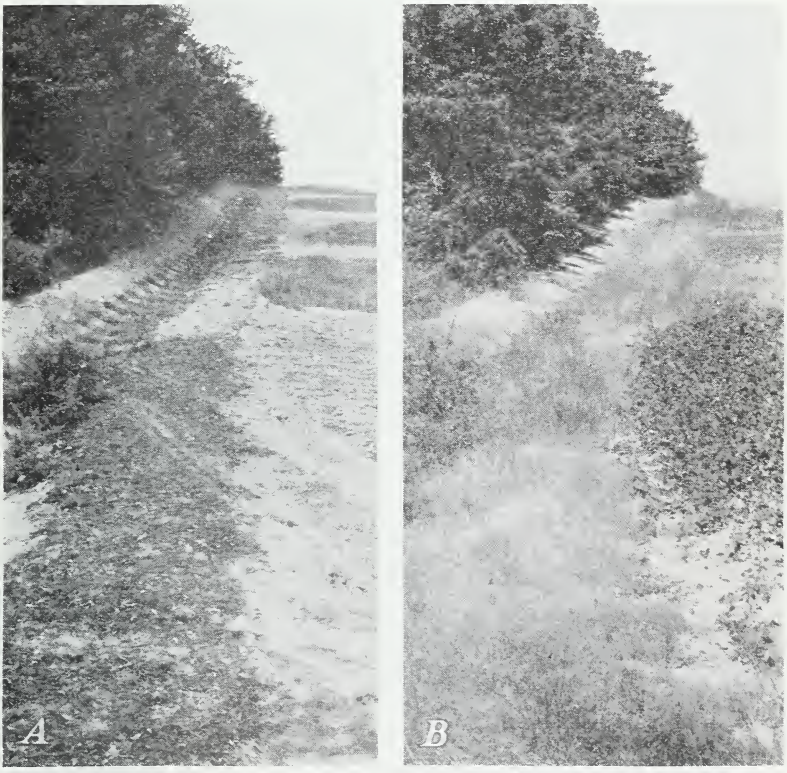

FIGURE 5.—A terrace outlet ditch bank seeded and mulched: *A*, The lower portion shows pine litter, the upper portion, straw; *B*, the vegetation 5 months later.

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Lespedeza sericea

Lespedeza sericea has been used more extensively than any other perennial plant in conjunction with mulch. Both *L. sericea* and *L. juncea*, another introduced perennial lespedeza, have responded well to mulching, as have the annual lespedezas, common, Kobe, and Korean. The annuals, however, are not adapted to very severely eroded sites, except temporarily.

Because of the increased attention to soil conservation practices during the past few years and because of the outstanding success that has been realized from the use of mulch in establishing vegetation on eroded areas, mulching is becoming more widespread as an effective tool for combating soil erosion. It is equally valuable on road banks (fig. 6), and may be used with success on old abandoned roadways, poor spots in cultivated fields, gullies in pastures, and on similar areas where erosion has left a scar.

FIGURE 6.—A road bank seeded and mulched: *A*, Immediately after laying pine brush; *B*, the same bank completely stabilized 4 months later.

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